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ABSTRACT

According to a report from the University of New Mexico (UNM) 52 percent of Del Norte High School's (Albuquerque) graduates who entered UNM in the fall of 1979 were placed in at least one Basic Skills class, designed to assist beginning students whose American College Test (ACT) scores showed deficient college preparation in raising their academic achievement to college entrance standards. In response, Del Norte undertook a study of its graduates who were (1) in the UNM Basic Skills program, or (2) exempted from the Basic Skills program. Their high school records were reviewed along three dimensions--factual descriptors, overall achievement, and high school curricular factors--and analyzed statistically. Major findings and their implications are discussed. (Author/GK)

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DEL NORTE'S STUDY OF HIGH SCHOOL FACTORS AS RELATED TO PLACEMENT OF FRESHMEN IN THE UNIVERSITY OF NEW MEXICO'S BASIC SKILLS PROGRAM

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January, 1981

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TM 810 750

DEL NORTE'S STUDY OF HIGH SCHOOL FACTORS AS RELATED TO PLACEMENT OF FRESHMEN IN THE UNIVERSITY OF NEW MEXICO'S BASIC SKILLS PROGRAM

BACKGROUND

In the fall of 1979, the University of New Mexico (UNM) instituted a Basic Skills program. As understood at the high school level, the purpose of the program was to assist beginning university students whose American College Test (ACT) scores showed deficient college preparation in raising their academic achievement to college entrance standards. During the 1979-80 school year, it was reported that sixty percent of the entering freshmen at UNM were in one or more Basic Skills class. According to another UNM Testing Division report, fifty-two percent of Del Norte High School's graduates who entered UNM in the fall of 1979 were placed in at least one Basic Skills class.

In an effort to better understand this situation and to plan curricular or advisor remedy at the high school level, Del Norte High School undertook a study of its graduates who were in the UNM Basic Skills program in 1979-80. To assist in the study, UNM provided a print-out in July, 1980, of those Basic Skills students who had graduated from Del Norte. UNM also provided a list of all students from Del Norte enrolled at UNM in the fall of 1980. Other data provided included the criteria for placing Basic Skills students.* Two groups of students were defined: (1) Students in Basic Skills from Del Norte and (2) Students exempted from Basic Skills from Del Norte. It is the purpose of this report to present data and discussion relative to these two groups of students.

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* ACT scores lower than 19 in English, 8 in math, 15 in social studies, and 18 in natural sciences.

PROCEDURES

The study involved a total of 108 students. Eighty-six of these had taken at least one basic skills course in 1979-80 at UNM and also had records at Del Norte High School. The remaining twenty-six were randomly selected from a population of 109 UNM/Del Norte students (Class of '79) who were not enrolled in Basic Skills courses in 1979-80. The random sample was drawn only from Class of '79 students to ensure that each had been considered for, but had been found exempt from, Basic Skills placement.

The 108 student records at Del Norte High School were reviewed along several dimensions:

(1) Factual Descriptors, including year of high school graduation, graduation itself, and number of years (if any) transferred to Del Norte from another high school.

(2) Over-all Achievement, including cumulative grade point average, rank-in-class, and American College Test (ACT) scores.

(3) High School Curricular Factors, including number of year courses taken in language arts, social studies, mathematics, science, and foreign languages; grades in such courses, and the degree of college preparatory emphasis in such courses. The degree of college preparation in high school courses was defined by the Del Norte Department Chairpersons and other staff who utilized a weighting scale of from one (1) through eleven (11). A weighting of one indicated the least level of college preparatory emphasis in a given course, while an eleven indicated the greatest level of college preparatory emphasis. See Appendix A for the course ratings that were utilized.

The data from the review of high school student records along these dimensions were analyzed statistically. These analyses include t-tests comparing group means (Figure 1, pp. 5-8) and multiple regression with simple correlations (Table 2, p. 9).

The study is indebted to Dr. William Smith, Evaluation Specialist, Albuquerque Public Schools, for his assistance in the computer programming for the statistical analysis.

FINDINGS

Descriptive. Eighty-six Del Norte students were enrolled in 170 UNM Basic Skills courses at UNM in 1979-80. The average was nearly two courses per student. The breakdown according to Basic Skills content area and the UNM grades received are shown in Table 1.

Table 1.

Number of UNM/Del Norte Students in Basic Skills Courses According to Content Areas and UNM Grades Received

UNM Basic Skills Content Area	Number Receiving Grades of... A	B	C	D	F or W	Total in Area	Percent in Area
English	1	13	42	7	9	72	42%
Math	1	3	5	2	8	19	11%
Social Studies	4	11	10	5	9	39	23%
Science	3	8	17	4	8	40	24%
Total	9	35	74	18	34	170*	

*170 courses taken by 86 students, or average of 2 courses per student.

The Year of Graduation data for the Basic Skills group shows that 77 percent were from the Del Norte Class of '79. However, the remaining 23 percent had deferred college entrance after high school graduation for up to eleven years. Three percent had not graduated at all.

Year of Graduation for Basic Skills Group	Number of Students
1979	66
1978	7
1977	3
1976	1
1975	2
1974	1
1973	1
1968	2
Non-Graduate	3
Total	86

Statistical Analysis. Figure 1 (pp. 5-8) shows comparisons between the Basic Skills group and the Exempt group along twenty-two dimensions. T-tests were used to determine the significance of the differences between group means. In fifteen of the twenty-two instances, the differences were significant at the .0001 level of probability.

Table 2 summarizes the multiple regression analysis. The percent of total variance, or R Squares, and the simple correlation coefficients are listed, along with levels of significance for the simple R.

Observations Relative to Findings. Based on the statistical analyses, several observations are possible. First, the t-test data suggest that significant relationships exist between Basic Skills placement and at least fifteen high school factors that were reviewed in student records. In an order of most significant to least significant, these factors are as follows:

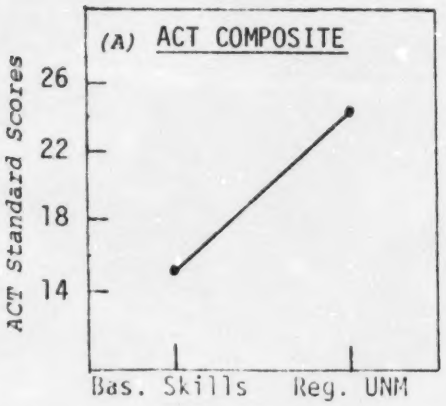
(1) ACT Composite Score
(2) Cumulative High School Grade Point Average
(3) Rank in Class of approximately 620 students
(4) ACT Social Studies Score
(5) ACT Science Score
(6) High School Grades in Math
(7) ACT English Score
(8) High School Grades in Science
(9) ACT Math Score
(10) High School Grades in Language Arts
(11) Weighted High School Science Courses Taken
(12) Weighted High School Math Courses Taken
(13) Number of High School Science Courses Taken
(14) Weighted High School Language Arts Courses Taken
(15) Number of High School Math Courses Taken

The remaining seven factors which were not significant at the level chosen for significance were as follows:

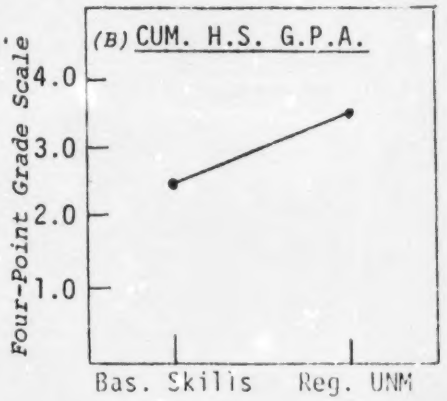
(16) High School Grades in Social Studies
(17) Last High School Year Math Taken
(18) Number of Years of Foreign Language Taken
(19) Weighted High School Social Courses Taken
(20) Number of Years Transferred to Del Norte H.S.
(21) Number of High School Social Studies Courses Taken
(22) Last Grade Achieved in Foreign Languages.

(Text continues on page 9)

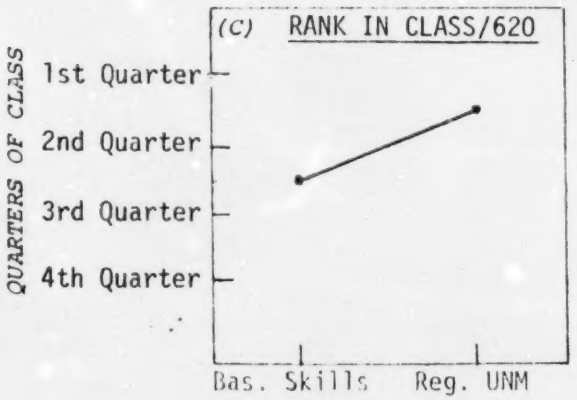
Figure 1. T-tests Comparing Means of Factors for D.N. Students in (1) UNM Basic Skills Courses and (2) Regular UNM Courses



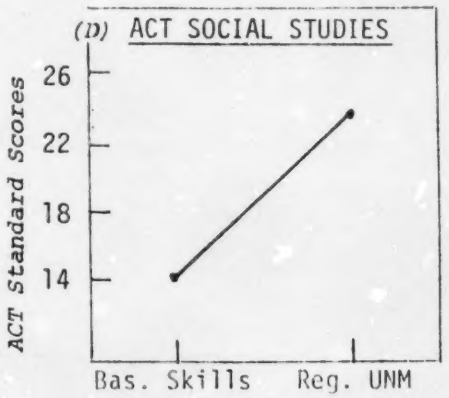
	Bas. Skills	Reg. UNM
Mean	15.13	24.23
t =	-10.22	
Sig.	.0001	



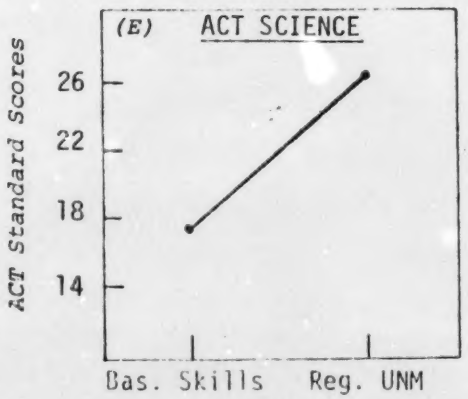
	Bas. Skills	Reg. UNM
Mean	2.47	3.45
t =	-9.54	
Sig.	.0001	



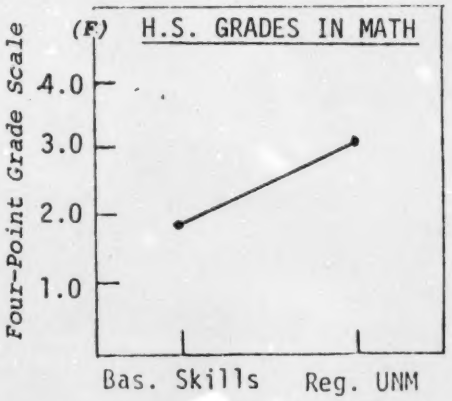
	Bas. Skills	Reg. UNM
Mean	306.76	62.68
t =	+ 8.55	
Sig.	.0001	



	Bas. Skills	Reg. UNM
Mean	14.13	23.86
t =	-8.17	
Sig.	.0001	

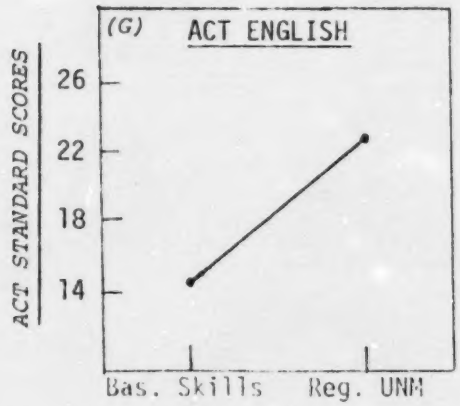


	Bas. Skills	Reg. UNM
Mean	17.44	26.23
t=	-8.06	
Sig.	.0001	

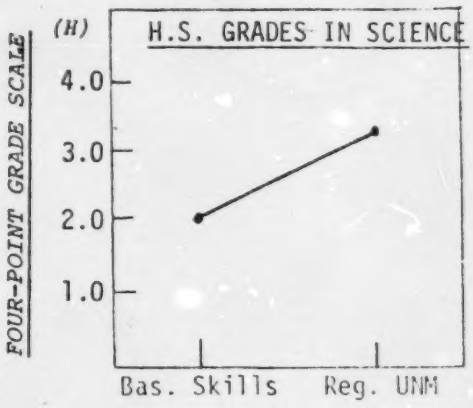


	Bas. Skills	Reg. UNM
Mean	1.94	3.08
t=	-8.01	
Sig.	.0001	

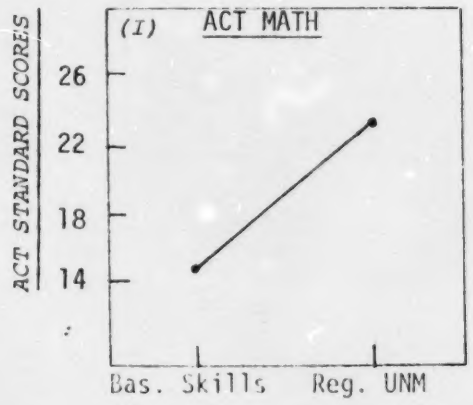
Figure 1. T-tests (continued)



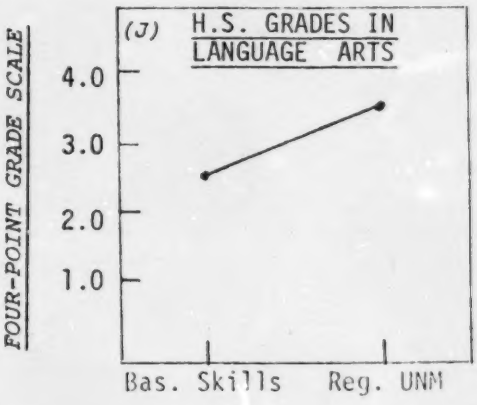
	Bas. Skills	Reg. UNM
Mean	14.69	22.68
t =	-7.84	
Sig.	.0001	



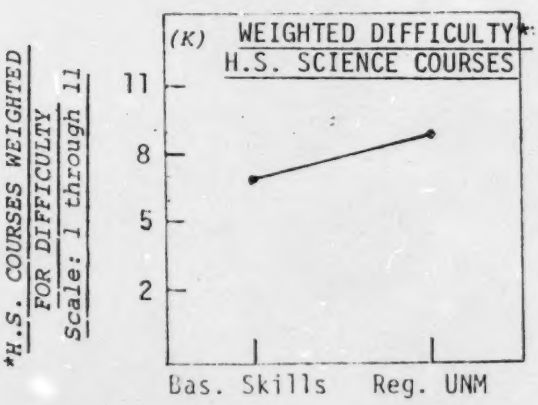
	Bas. Skills	Reg. UNM
Mean	2.06	3.31
t =	-7.61	
Sig.	.0001	



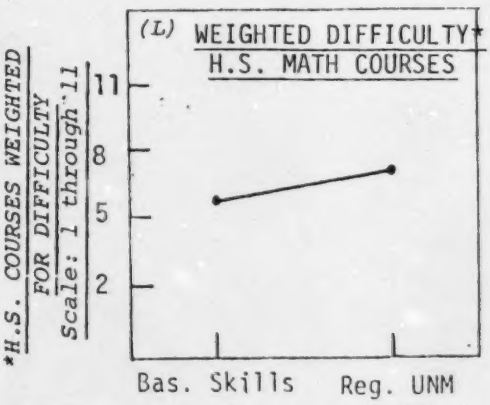
	Bas. Skills	Reg. UNM
Mean	14.20	23.32
t =	-6.88	
Sig.	.0001	



	Bas. Skills	Reg. UNM
Mean	2.51	3.55
t =	-6.42	
Sig.	.0001	



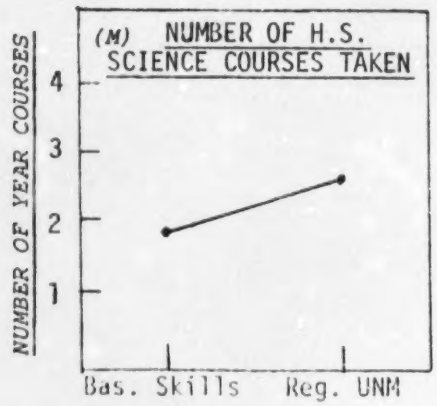
	Bas. Skills	Reg. UNM
Mean	6.85	8.91
t =	-6.26	
Sig.	.0001	



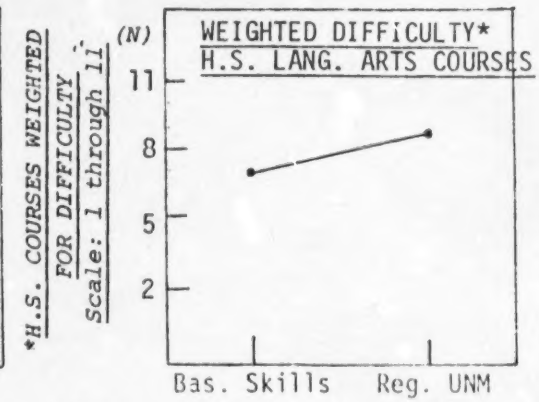
	Bas. Skills	Reg. UNM
Mean	5.70	7.15
t =	-5.62	
Sig.	.0001	

* See Appendix A for course weightings.

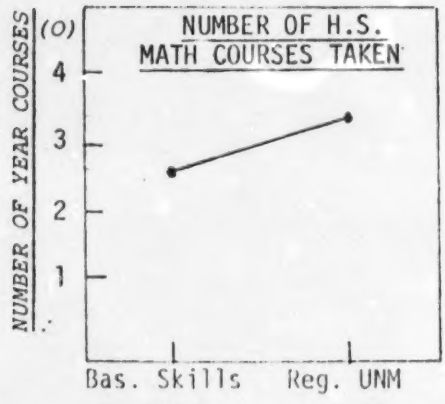
Figure 1. T-tests (continued)



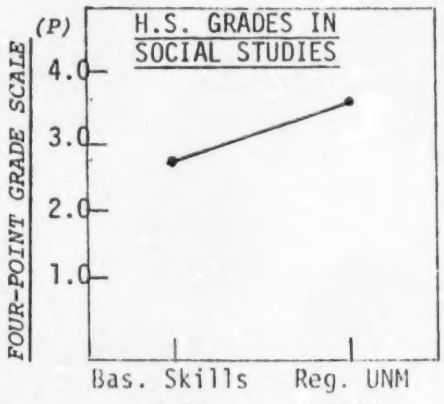
	Bas. Skills	Reg. UNM
Mean	1.90	2.64
t =	-4.46	
Sig.	.0001	



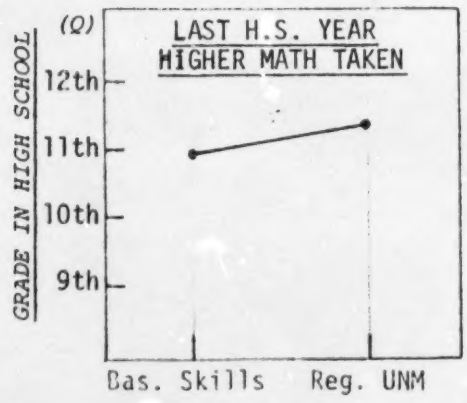
	Bas. Skills	Reg. UNM
Mean	7.01	8.73
t =	-4.38	
Sig.	.0001	



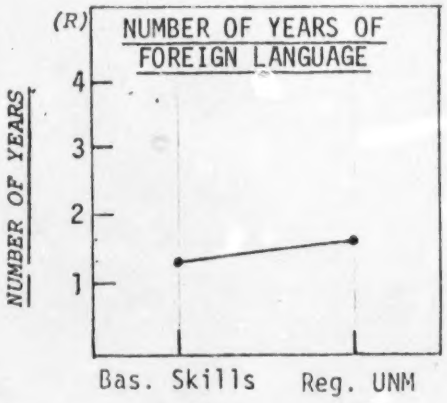
	Bas. Skills	Reg. UNM
Mean	2.62	3.41
t =	-3.93	
Sig.	.0001	



	Bas. Skills	Reg. UNM
Mean	2.78	3.64
t =	-2.40	
Sig.	(Not Significant)	



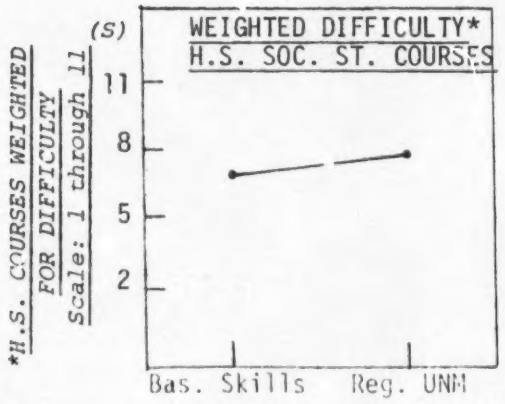
	Bas. Skills	Reg. UNM
Mean	10.98	11.41
t =	-1.97	
Sig.	(Not Significant)	



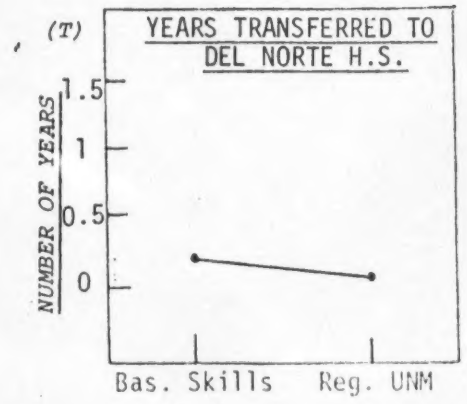
	Bas. Skills	Reg. UNM
Mean	1.34	1.77
t =	-1.83	
Sig.	(Not significant)	

* See Appendix A for course weightings.

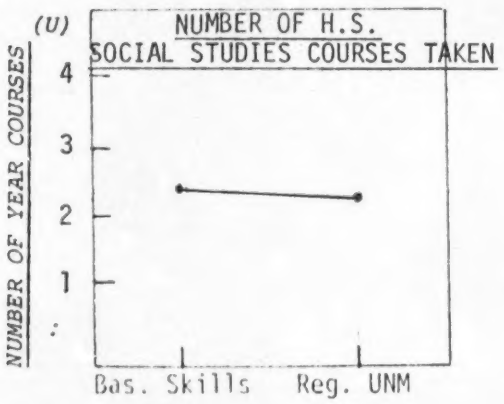
Figure 1. T-tests (continued)



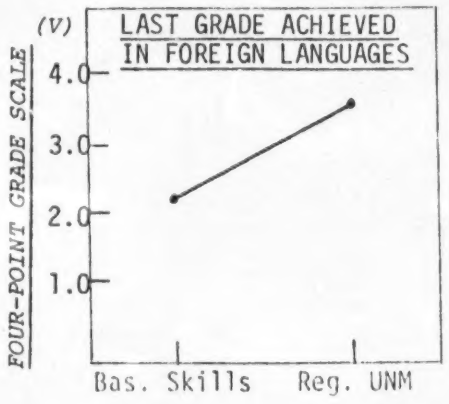
	Bas. Skills	Reg. UNM
Mean	6.82	7.84
t =	-1.59	
Sig.	(Not Significant)	



	Bas. Skills	Reg. UNM
Mean	0.37	0.18
t =	+1.06	
Sig.	(Not Significant)	



	Bas. Skills	Reg. UNM
Mean	2.37	2.27
t =	+0.59	
Sig.	(Not Significant)	



	Bas. Skills	Reg. UNM
Mean	2.19	3.62
t =	n/a	
Sig.	n/a	

*See Appendix A for course weightings.

The last variable listed ("Last grade Achieved in Foreign Languages") was not included in the t-test procedures, since the computer program utilized the number for all Basic Skills students, not just those students in a foreign language course in high school, in computing the group means.

A second set of observations are based on statistical analysis using multiple regression for the total population of the study relative to all factors. The results of this analysis are shown on Table 2. The data suggest that the twenty-one factors together account for 75.46 percent of the total variance. Within the 75 percent, by far the major factor

Table 2. Summary of Multiple Regression and Simple Correlation

DEPENDENT VARIABLE: Number of UNM Basic Skills Classes			
Factor	% Variance R Square	Simple Correlation Coefficient	Level Sig.
ACT Composite	.68389	-.82697	.001
Last Year Math Taken	.69416	-.37082	.001
Number Science Courses	.70444	-.32687	.001
ACT Social Studies	.71638	-.73209	.001
Grades Language Arts	.72827	-.43350	.001
Grades Math	.73394	-.56557	.001
Weighted Social Studies	.73689	-.28192	n.s.
Grades Social Studies Courses	.74246	-.24032	n.s.
Number Social St. Courses	.74539	-.09419	n.s.
Years of Transfer	.74767	+.15345	n.s.
ACT English	.75009	-.71247	.001
Cum. H.S. Grade Point Average	.75145	-.54987	.001
Grades Science Courses	.75224	-.45928	.001
Rank in 620 Class	.75308	+.53591	.001
ACT Science	.75343	-.69452	.001
Weighted Math Courses	.75372	-.54307	.001
Weighted Science Courses	.75430	-.43110	.001
Number Foreign Lang. Courses	.75450	-.18172	n.s.
Number of Math Courses	.75454	-.48482	.001
Weighted Language Arts Courses	.75457	-.51049	.001
ACT Math	.75460	-.67768	.001

is the ACT Composite score. This is not surprising, since Basic Skills eligibility is determined by the ACT test, with the four sub-tests being systematically encorporated within the Composite Score. Taken together,

the ACT Composite Score and the four sub-test scores on the ACT account for 69.98% of the total variance.

A third set of observations is suggested by the degree of correlation between all factors of the study's population as a whole without separation into two groups. Sixteen of the twenty-one factors correlate significantly at the .001 level of probability. In an order of the most to the least degree of significant correlation, these factors are as follows:

(1) ACT Composite Score
(2) ACT Social Studies Score
(3) ACT English Score
(4) ACT Science Score
(5) ACT Math Score
(6) H. S. Grades in Math
(7) Cumulative H.S. Grade Point Average
(8) Weighted H.S. Math Courses Taken
(9) Rank in Class of approximately 620 students
(10) Weighted H.S. Language Arts Courses Taken
(11) Number of H.S. Math Courses Taken
(12) H.S. Grades in Science
(13) H.S. Grades in Language Arts
(14) Weighted H.S. Science Courses Taken
(15) Last Year High School Math Taken
(16) Number of H.S. Science Courses Taken

The non-significant factors are also important to recognize. Those remaining factors not correlating significantly with the Basic Skills placement are as follows:

(17) Weighted H.S. Social Studies Courses Taken
(18) H.S. Grades in Social Studies
(19) Number of Foreign Language Courses Taken
(20) Number of Years Transferred to Del Norte H.S.
(21) Number of H.S. Social Studies Courses Taken

A discussion of the implications of these findings is presented in the following section.

SUMMARY AND CONCLUSIONS

Using ACT scores as criteria, more than half of the freshmen (Fall, '79) at the University of New Mexico were placed in a UNM Basic Skills program to improve the degree of their college preparedness. The high school records of students from Del Norte High School were reviewed in an effort to determine high school factors related to placement in, or exemption from Basic Skills placement. The emphasis of the study was exploratory, and the findings are suggestive only.

It was not surprising to find that ACT scores were significantly related to Basic Skills placement, since those test scores were the original criteria used. However, other high school factors bore significant relationships to whether or not students were placed in the Basic Skills program. Statistical analysis suggests the following:

...that the higher the over-all academic achievement of students in high school, the more likely they are to demonstrate college preparedness.

...that the more college preparatory courses that students take in high school, the more likely they are to be prepared for college entrance. The study suggests that this is particularly true in the areas of mathematics, science, and language arts.

...that the higher the level of achievement in these courses, as measured by grades given, the higher the degree of college preparation.

Several implications which these findings suggest for high school program are as follows:

...that students who intend college entrance undertake high school courses which emphasize college preparation and work towards a mastery of that course content. This appears to be most important in the areas of mathematics, science, and language arts.

...that students, parents, and high school staff attempt to establish, at the earliest possible point in the four-year high school, the post-high school goals of students so that courses may be selected accordingly.

...that universities and colleges include criteria, in addition to test scores, in assessing the degree of college preparedness for students. The study suggests, for example, that such factors might be "high school grade point average" or "rank-in-class."

...that more research be planned both to test the findings of this study and to examine other factors important in determining the degree of students' college preparation. For example, the amount of high school participation in extra-curricular activities is a possible factor to be examined. Others might be a measure of motivational strength in academic preparation or a measure of the sureness of post-high school goals.

This report has been exploratory in nature. It has also been intentionally brief. Other findings and/or implications are present in the data. Therefore, the reader is encouraged to examine the figures, tables, and other tabulations for additional information.

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APPENDIX A

Rating Scales for College Preparatory Emphasis in Del Norte High School Courses

Weighted by department chairpersons and staff for the Basic Skills Study. A weighting of one (1) means the least college preparatory emphasis, while a weighting of eleven (11) means the greatest college preparatory emphasis.

Rating Weight	11-12 Language Arts	10-12 Social Studies	9-12 Mathematics	10-12 Science
1	Radio TV Drama*	U.S.H.-Special	Basic Math 1 Basic Math 2	Life Science
2	Reading Lab LA-Special	Mil. History SW History	Consum. Math	Health
3	Writ. Exper. Read. Exper.	Amer. Prob.	Pre. Alg. Elem. Alg.	Science Surv.
4	Journalism	You & Law	SS-Alg. 1 SS-Geom.	Phy. Science
5	Speech	Anthropol.	Comp. Prog.	Applied Chem.
6	Creative Wr. Career Engl.	World Geog.	Algebra 1 Int. Alg.	Biol. of Man
7	LA 3/4 Reg. Child Lit Sci. Fiction Ethnic Lit. Myth/Bible	Sociology Psychology	Geometry	Biology 1
8	Cont.Fict. Am.Studies	U.S. History Am. Studies	Algebra 2	Earth Science Ecology
9	LA 3/4 Enr.	Archaeology	Algebra 2E	Biology 1 Enr. Chemistry 1 CEC-Sciences
10	Shakespeare Study Tech. Coll. Gram.	World Hist.	Math Analy.	Chemistry 1Enr
11	Inf.Writ Cont.Prose World Lit.	U.S.H. Enr. Am St. Enr. World H. Enr.	Calculus	Anat. Phys. Biology 2 Physics Chemistry 2